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Appeal Brief

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of **David J. Stevens et al.**	Group Art Unit: **3641**
Application No. **08/855,895**	
Filed: **05/12/97**	Examiner: **Johnson, Stephen M.**
Title: **REACTIVE PERSONNEL PROTECTION SYSTEM**	
Attorney Docket No. **26552.00028**	

San Antonio, Texas 78205
May 5, 1999

Assistant Commissioner for Patents
Washington, D.C. 20231

APPEAL BRIEF

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Date: May 5, 1999

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Signature

Sir:

This appeal brief is timely filed within two months of the Notice of Appeal filed formally on March 10, 1999. The Appellant respectfully requests the Board and the Examiner to consider the following information, submitted in accordance with the requirements of 37 CFR §1.192.

1. ***Real Party in Interest***

The real party in interest is the owner and Appellant, Southwest Research Institute.

2. ***Related Appeals and Interferences***

No appeals or interferences are known to the Appellant or the Appellant's legal representative which will directly affect, or be directly affected by, or have a bearing on, the Board's decision in this appeal.

3. ***Status of Claims***

Claims 30-31 are considered allowable by the Examiner, as is Claim 32 (submitted by amendment after the final office action, but not entered). Claims 2-3, 9, 18-20, and 27 have been objected to by the Examiner, and are considered allowable if rewritten to avoid a rejected base claim. Claims 1, 4, 6-8, 17, and 25-26 stand rejected. The Appellant has decided that only Claims 1-9, 17-21, 25-28, and 30-32 are to be considered in this appeal.

4. *Status of Amendments*

The Examiner's Final Office Action was mailed on January 7, 1999. The Appellant's Amendment and Response under 37 C.F.R. §1.116 was filed by facsimile transmission to the Examiner's local patent office facsimile machine on March 5, 1999, and filed formally on March 10, 1999 to the formally designated Patent Office facsimile machine. The Examiner noted in an Advisory Action, mailed March 19, 1999, that upon filing of an appeal, the Amendment offered by the Appellant would not be entered. The status of the claims, upon entry, would be as follows: Claims 30-32 allowed; Claims 2-3, 9, 18-20, 27 objected to; and Claims 1, 4, 6-8, 17, and 25-26 rejected.

The Appellant notes that the text of Claim 5 is incorrect due to a typographical error. Neither the Examiner nor the Appellant has noticed this discrepancy up to this point in the prosecution process. Therefore, the Appellant has reproduced this claim below so as to indicate its correct form:

> 5. The system of Claim 1 wherein said rapidly deployable airbag is deployed across an opening into a room located between said person and said [object] projectile.

For purposes of economy and clarity, it is requested that the amended claim, as shown above, be allowed to remain in place of the currently pending Claim 5.

5. *Summary of the Invention*

The apparatus of the invention, a reactive personnel protection system, may comprise: a radar-based projectile detection system (page 6, lines 2-5; page 8, lines 11-16; page 10, line 15 - page 11, line 3; page 11, lines 8-10; page 15, lines 14-16; page 15, line 24 - page 17, line 11; page 17, lines 21-23; page 18, lines 1-4; page 18, lines 5-11; Figures 2A and 2B, elements 110 and 120; and Figure 4); at least one rapidly deployable airbag (page 5, lines 20-23; page 6, lines 12-14; page 7, lines 8-10; page 11, line 9; page 11, lines 10-12; page 11, lines 13-14; page 11, lines 16-21; page 11, line 22 - page 15, line 4; page 15, line 10; page 15, line 13; and Figures 1B, 2B, and 3, element 25); and a gas-generating system for rapid deployment of the airbag in response to detection of the approach of a projectile in proximity to a person by the detection system (page 6, lines 12-14; page 7, lines 23-25; page 12, lines 7-12; page 12, lines 20-23; page 15, lines 5-13; page 15, lines 22-24; page 19, lines 12-20; page 20, lines 16-18; and Figure 3, element 210). The radar-based projectile detection system may operate at frequencies of 8-20 Ghz or at 10.5 Ghz (page 15, line 24 - page 16, line 2; page 16, lines 6-7; page 22, lines 14-15; page 26, lines 18-19; and Figure 4, element 310), and may have anti-jamming electronics (page 7, lines 3-5; page 8, lines 18-21; and page 18, lines 12-24).

The airbag may be interposed between the projectile and the person upon deployment (page 5, line 22 - page 6, line 1; page 8, lines 11-16; page 11, lines 18-21; page 22, lines 20-22 and Figure 2B, elements 25, 100, and 130). The airbag may also be

deployed across an opening into a room located between the person and the projectile (page 13, line 18 - page 14, line 1).

The airbag may be constructed from polyethylene material, woven ballistic material, or aramid fiber material (page 7, lines 11-14; page 11, line 22 - page 12, line 3; page 12, lines 13-16; page 13, lines 7-15; and page 14, line 16 - page 15, line 4). The airbag may have a front surface and a rear surface adapted to slow and redirect the projectile (page 7, lines 11-14; page 11, lines 14-18; and Figure 2B, elements 25, 220 and 230).

The reactive personnel protection system claimed by the Appellant may also comprise a destructive object detection system (page 5, lines 14-20; page 6, lines 2-5; page 6, lines 15-25; page 7, lines 8-10; page 8, lines 11-16; page 9, line 23 - page 10, line 2; page 10, line 15 - page 11, line 3; page 11, lines 8-10; page 15, lines 14-16; page 15, line 24 - page 17, line 11; page 17, lines 21-23; page 18, lines 1-4; page 18, lines 5-15; page 19, lines 11-12; Figure 1A, elements 40, 45, and 50; Figures 2A and 2B, elements 110 and 120; and Figure 4); at least one rapidly deployable airbag (page 5, lines 20-23; page 6, lines 12-14; page 7, lines 8-10; page 11, line 9; page 11, lines 10-12; page 11, lines 13-14; page 11, lines 16-21; page 11, line 22 - page 15, line 4; page 15, line 10; page 15, line 13; and Figures 1B, 2B, and 3, element 25); and a gas-generating system for rapid deployment of the airbag in response to detection of the approach of the object in proximity to a person by the detection system (page 6, lines 12-14; page 7, lines 23-25; page 12, lines 7-12; page

12, lines 20-23; page 15, lines 5-13; page 15, lines 22-24; page 19, lines 12-20; page 20, lines 16-18; and Figure 3, element 210). The destructive object detection system may be a radar-based projectile detection system, as noted above, wherein the object is a ballistic projectile. The system may operate at frequencies of 8-20 Ghz or at 10.5 Ghz, as noted previously. Also, as noted above, the airbag in the system may be deployed across a room opening, between the object and the person (page 5, line 22 - page 6, line 1; page 8, lines 11-16; page 9, line 21 - page 10, line 2; page 11, lines 18-21; page 13, line 18 - page 14, line 1; page 22, lines 20-22; and Figure 2B, elements 25, 100, and 130).

The invention may also be described as a method to reactively protect personnel from the rapid approach of an object by deployment of an airbag prior to the arrival of the object at the location of the personnel, comprising the steps of: detecting the approach of the object (page 6, lines 2-5; page 15, line 22 - page 18, line 11; page 19, lines 11-12; and page 19, lines 21-24); discriminating the presence of the object with respect to the presence of electronic noise (page 6, lines 5-11; page 7, lines 3-5; page 8, lines 16-21; page 10, lines 19-21; page 16, line 14 - page 17, line 9; page 18, line 12 - page 19, line 10; and page 20, lines 4-15); activation of a gas generation system in response to discrimination of the presence of the object (page 6, lines 11-14; page 7, lines 23-25; page 12, lines 7-11; page 12, lines 20-23; page 15, lines 5-13; page 19, lines 11-20; page 20, lines 16-23; Figure 2B; Figure 3; and Figure 4, element 450); and deployment of an airbag between the object and the personnel responsive to activation of the gas generation system (page 5,

lines 14-17; page 5, line 22 - page 6, line 1; page 8, lines 11-16; Figure 1B; and Figure 2B).

The method of the invention may further accomplish the detecting step using a radar-based projectile detection system, wherein the object is a ballistic projectile (page 6, lines 2-9; page 8, lines 11-16; page 10, lines 15-21; page 11, lines 8-11; page 15, lines 14-16; Figure 2A; Figure 2B; and Figure 4). The method of the invention may make use of a radar-based projectile system which operates within a frequency range of 8-20 Ghz, or at a frequency of 10.5 Ghz (page 15, line 24 - page 16, line 2; page 16, lines 6-7; page 22, lines 14-18; page 26, lines 18-22; and Figure 4, element 310). The method of the invention may also operate such that the deployment of the airbag is accomplished across an opening into a room located between the personnel and the object (page 13, lines 18-21; Figure 1A; and Figure 1B).

6. *Issues*

A. Whether the election requirement imposed by the Examiner in the Office Action dated February 9, 1998, and implemented in the Office Action dated August 27, 1998 was properly made?

B. Whether Claims 1, 4, 7, and 25-26 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Genovese?

C. Whether Claims 1, 4, and 25-26 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Cho?

D. Whether Claims 17 and 25 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Nitschke, et al.?

E. Whether Claims 17 and 25 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Caruso, et al.?

F. Whether Claims 6 and 8 are unpatentable under 35 U.S.C. §103(a) over Genovese in view of Khandhadia, et al.?

7. ***Grouping of Claims***

The applicant respectfully submits that the rejected claims do not stand or fall together. More specifically, it will be shown in the arguments below that the prior art fails to anticipate an/or render obvious at least one element of each independent claim, and further, even if the Board determines that such is not the case, it will be shown that the prior art does not anticipate and/or render obvious at least one element of every dependent claim. The Appellant has grouped the claims as shown below only for purposes of isolating and reducing the issues in this appeal. However, the groupings below are not to be considered the only possible grouping of the claims, nor an indication that individual claims are not separably patentable.

More specifically, the claims have been grouped according to the Examiner's arguments and grounds of rejection. However, even though Claims 1, 4, 7, and 25-26 have been grouped together in order to argue the Examiner's rejection under 35 U.S. §102(e), as being anticipated by Genovese, Claim 1 is separately patentable from Claims 25-26. Claim 4 is separately patentable from Claims 1, 7, and 25-26. Claim 7 is separately patentable from claims 1, 4, and 25-26. And Claim 26 is separately patentable from Claims 1, 4, 7, and 25.

Similarly, even though Claims 17 and 25 have been grouped together in order to argue the Examiner's rejection under 35 U.S.C. §102(e), as being anticipated by Nitschke, et al., they do not stand and fall together. Claim 17 is separately patentable from Claim 25.

Finally, even though Claims 6 and 8 have been grouped together in order to argue the Examiner's rejection under 35 U.S.C. §103(a) as being unpatentable over Genovese in view of Khandhadia et al., they do not stand and fall together. Claim 6 is separately patentable from Claim 8.

8. ***Argument***

A. As to whether the restriction requirement imposed by the Examiner was proper, the Appellant contends that the reasons given for the requirement were not timely made by the examiner; the requirement was made in ignorance of the

definition of "destructive object" as offered by the Appellant; the requirement was improper in view of the requirements of 35 U.S.C. §1.21, 37 C.F.R. §1.142, and the Rules promulgated by the U.S. Patent and Trademark Office; and the species are not patentably distinct.

A.1 The Election of Species Requirement Is Contrary to the U.S. Code and to the Code of Federal Regulations.

In title 35 U.S.C. §121, an application may be required to be restricted to one of several claimed inventions only if each is able to support separate patents, and they are either independent or distinct (MPEP §803). Where inventions as disclosed and claimed are both (a) species under a claimed genus, and (b) related, then the question of restriction must be determined by the practice applicable to election of species and the practice applicable to other types of restrictions, such as those covered in the MPEP, §806.05 - §806.05(i). If restriction is improper under either practice, it should not be required. See MPEP, §806.04(b) first paragraph.

It is submitted that the inventions as disclosed and claimed are all "species under a claimed genus" and "related". For example, Claims 18 and 26 are directed to embodiments (species) of the invention illustrated in Figs. 2A-2B. The reactive personnel protection system embodying the present invention and illustrated in these figures, includes, as set forth in Claims 18 and 26:

> a radar-based projectile detection system (or detection using such a system) ... at least one rapidly deployable air bag (or deployment of such an air bag) ... and a gas generating system (or activation of such a system) for rapid deployment of said air bag in response to detection of the approach of said projectile in proximity to said person by said detection system.

Moreover, the reactive personnel protection system as illustrated in Figs. 1A-1B, and 2A-2B and designated as separate species by the Examiner, are to varying degrees, identical in construction. Does the fact that sensors are changed between embodiments, or that air bags may be free standing, or deployed across a doorway, necessarily nullify the possibility of presenting a generic claim? The Appellant proposes that this is akin to preventing a claim to a generic data acquisition system, simply because different sensors are used (e.g. to take blood pressure data, as opposed to room temperature data), without regard to the functional nature of the system. While it is true that a sensor combined with a system may be a separate invention, it may also be that the system itself is a separate invention. Thus, it is respectfully submitted that the Examiner has erroneously attempted to designate a single species as two separate species.

A.2 The Election of Species Requirement Is Improper under The Rules of the U.S. Patent and Trademark Office.

It is respectfully submitted that the separate species designation proposed by the Examiner is incorrect because the inventions are related, i.e., two or more subjects as disclosed by the designated separate species figures are not distinct. Species "A" and "B" are related in that they are, in the case of Figs. 1A-1B, and 2A-2B, practically identical reactive personnel protection systems, and all figures are defined by the genus Claims 17 and 25.

It is further respectfully submitted that the embodiments of the invention described and claimed in the subject application are related in the sense set forth in MPEP § 808.02:

> "Where, disclosed in the application, the several inventions claimed are related, and such related inventions are not patentably distinct as claimed, restriction under 35 U.S.C. §121 is never proper (MPEP §806.05)."

Therefore, it is respectfully submitted that, in the absence of structural distinctions stated by the examiner for making unrelated, separate species designations, and pointing out why the species are considered to be unrelated, independent, and distinct, that such assertions, in view of the claims which define the invention, is improper.

In order to establish reasons for restriction of related inventions as claimed, the examiner must show by appropriate explanation one of the following, as set forth in MPEP § 808.02:

1) Separate classification thereof;

2) A separate status in the art when they are classifiable together; and

3) A different field of search.

Other than separating the species according to the type of destructive object detected (See pg. 3, paragraph 1 of Examiner's Response dated March 19, 1999, which response was NOT made as is required in the initial restriction requirement, but only after final rejection was made), the examiner has not offered specific reasons why the categories listed should be considered as separate species and why subsequent restriction is therefore required. The definition of "destructive object" offered by the Appellant in the initial application (page 8, lines 11-16) has been ignored. Apparently, the Examiner assumes that "pressure waves" emanating from an explosion are not such an object, but nowhere is such an assumption stated explicitly. Nor is support given for such an assumption. Thus the Examiner's distinction lies with the type of object detected, and not with the system itself.

The *Manual of Patent Examining Procedure*, § 814(A), second paragraph, further states that:

> "As pointed out in *Ex parte Ljungstrom*, 1905 C.D. 541, 119 O.G. 2335, the particular limitations in the claims and the reasons why such limitations are considered to restrict the claims to a particular disclosed species should be mentioned if necessary to make the requirement clear."

It is respectfully submitted that the requirement for election of species, in view of related, and in some cases identical, construction of the separately designated species by the examiner, is not sufficiently clear.

Finally, the *Manual of Patent Examining Procedure*, § 816, states that:

> "The particular reasons relied on by the examiner for holding that the inventions as claimed are either independent or distinct should be concisely stated. A mere statement of conclusion is inadequate. The reasons upon which the conclusion is based should be given."

No such statement was presented in the initial requirement for election and restriction; only after the final office action.

In the present invention, all of the claims are directed to "a reactive personnel protection system", or the operation of such a system. More specifically, independent Claims 17 and 25 define the operation and structure of the reactive personnel protection system shown in Figs. 1A-1B and 2A-2B, and

designated by the examiner as separate species "A", and "B". The reactive personnel protection systems illustrated in Figs. 1A-1B and 2A-2B are clearly sub-combinations of the invention defined by Claims 17 and 25. Thus, these embodiments are not distinct each from the other, nor are they unrelated to each other.

A.3 The Species, as Designated by the Examiner, Are Not Patentably Distinct.

As noted in the above remarks, Claims 17 and 25 define the reactive personnel protection system designated as separate species "A" and "B". Thus, species "A" and "B" are all related (i.e., not distinct). Thus, it is respectfully submitted that species "A" and "B" are related and not distinct, and that they each illustrate a common or closely related variant of the same reactive personnel protection system.

In summary, the species designations, as proposed by the Examiner, appear not to be supported by any timely, or valid reasons for making such a division. Moreover, the election of species requirement appears to be improper, in view of 35 U.S.C. §1.21, 37 C.F.R. §1.142, and the Rules promulgated by the U.S. Patent and Trademark Office. The Appellant therefore traverses the restriction requirement imposed by the Examiner.

B. As to whether Claims 1, 4, 7, and 25-26 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Genovese, the Appellant contends that rejection of

Claims 1, 4, 7, and 25-26 under 35 U.S.C. §102(e) is improper because Genovese does not anticipate the elements of "a destructive object detection system", or "a radar based projectile detection system"; a "rapidly" deployable airbag, and a gas generating system for "rapid deployment of the airbag in response to detection of the approach of said object (or a projectile) in proximity to said person."

Anticipation requires the disclosure in a single prior art reference of each element of the claim "arranged as in the claim." *Lindermann Maschinenfabrik GmbH. v. American Hoist & Derrick Co.*, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984)(citing *Connell v. Sears, Roebuck & Co.* 220 U.S.P.Q. 193 (Fed. Cir. 1983)). Genovese fails on this point.

The Examiner asserts that Genovese discloses a reactive personnel protection system comprising an inflatable air bag, a gas generating system, deployment in response to proximate detection of a ballistic projectile, and a radar-based detection system. While Genovese teaches the object of providing a "... rapid and effective damage-mitigating technique that may be used to control the motion of explosively propelled objects such as bullets ... and the like.", and that "... conventional sensor-controlled energizers that can detect motion, e.g., infrared sensors or Doppler radar sensors, are ideal for automatic operation.", Genovese does not teach how these two components may be combined to produce the Applicant's invention, which detects

and responds to a specific kind of motion - that of a destructive object, and more specifically, a *ballistic* projectile.

The Examiner also contends that the objective of controlling the motion of explosively propelled objects can "only be met by deploying an air bag *after* detection of ballistic activity." The Applicant respectfully disagrees. This statement is not supported by any of the cited references. Indeed, it is also possible to affect and control ballistic motion by inflating air bags *prior* to detecting such motion, which is precisely what occurs during the operation of Genovese's invention.

None of Genovese's drawings, or text, support operation other than by: bag inflation via manual operation [Col. 3, lines 49-50]; in response to a "predetermined action" (defined as deployment device deceleration) [Col. 4, lines 27-32]; via human-activated remote/radio control [Col. 4, lines 36-41; Col. 5, lines 1-4; and Col. 5, lines 14-16]; and automatically, via motion-detecting sensors (the *type* of motion detected by an automatic sensor is only defined in the context of manual/automatic monitoring of personnel entering a building) [Col. 4, lines 41-43 and Col. 5, lines 4-6, lines 24-25].

The Appellant requests consideration of representative statements made in Genovese, such as: "The general purpose of this invention is to provide *object-restraining systems* ...", Col. 1, lines 55-56; "... the present invention is directed to an *object-restraining method* that includes placing a plurality of expandable

restraining elements in an area, *dispersing the elements in the area*, and then expanding the elements to *restrain objects located in the area* ...", Col. 1, line 65 - Col. 2, line 2; "... provide a rapidly deployable, *passive immobilization* restraint technique for effective *use in close quarters or confined areas.*", Col. 2, lines 23-25; "... an inflatable *confinement* device 21 ...", Col. 2, line 67; and illustrations which are directed only toward air bag expansion *within a confined area to immobilize personnel.* None of these statements, or the operational disclosures referenced above, teach a "destructive object detection system", or a "ballistic projectile detection system"; a "rapidly deployable air bag", and rapid deployment of such an air bag, after detection by such a system, of a "destructive object (or ballistic projectile) in proximity to said person" as claimed by the Applicant.

Claim 1 was amended (but not entered as such by the Examiner) in response to the final office action to include a *ballistic* projectile detection system and a gas generation system for rapid deployment of an *anti-ballistic* air bag in response to the approach of a *ballistic* projectile in proximity to personnel. Further, Genovese does not disclose the additional limitation of deploying the air bag across the opening of a room, as claimed in Claim 4, nor does Genovese disclose the additional limitation of constructing the air bag from woven ballistic material, as claimed in Claim 7. As such, it is believed that the Examiner's objections regarding independent Claim 1, and dependent Claims 4 and 7, have been overcome.

Claim 1 is separately patentable from Claims 25-26 because Claim 1 discloses the additional limitation of a radar-based detection system (over Claim 25), and does not claim a ballistic projectile (over Claim 26). Claim 4 is separately patentable from Claims 1, 7, and 25-26 because Claim 4 discloses the additional limitation of deploying the air bag across the opening of a room. Claim 7 is separately patentable from Claims 1, 4, and 25-26 because Claim 7 discloses the additional limitation of constructing the air bag from woven ballistic material. Claim 26 is separately patentable from Claims 1, 4, 7, and 25 because Claim 26 discloses the additional limitations of a radar-based projectile system, wherein the projectile is a ballistic projectile.

In summary, the Genovese reference fails to disclose the elements of a "destructive object detection system," or a "radar-based projectile detection system,"; a "rapidly deployable air bag"; and a gas generating system for "rapid deployment of the air bag in response to detection of the approach of a destructive object (or a projectile) in proximity to said person ...". Since these limitations are not disclosed in the cited art, any objection to Claims 1, 4, 7, and 25-26 by the Examiner must fail. The Appellant respectfully asserts that the Genovese reference fails to anticipate Claims 1, 4, 7, and 25-26, and therefore, the Appellant traverses this ground of rejection.

C. As to whether Claims 1, 4, and 25-26 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Cho, the Appellant contends that rejection of Claims 1, 4, and 25-26 under 35 U.S.C. §102(e) is improper because Cho does not anticipate the elements of "a destructive object detection system", or "a radar based projectile detection system"; and a gas generating system for "rapid deployment of the airbag in response to detection of the approach of said object (or a projectile) in proximity to said person."

As noted above, anticipation requires the disclosure in a single prior art reference of each element of the claim "arranged as in the claim." *See Lindermann Maschinenfabrik GmbH. at* 485. Cho also fails on this point.

Cho discloses a system primarily used to minimize automobile collision damage. Cho actually teaches away from the concept of "deployment in response to proximate detection of a destructive object, or a ballistic projectile," in contradistinction to the Examiner's assertion. In fact, Cho notes that the "invention serves to minimize damage to other non-moving vehicle obstacles." Further, the objects named in the disclosure that can be detected do not move at the speed of a destructive object, such as a ballistic projectile (e.g., pedestrians, animals, inanimate objects, plants, trees, etc.). See Cho, Col. 7, lines 18-25.

The Examiner also asserts that Cho teaches a "radar-based detection system including 8-20 Ghz." This is incorrect. The disclosure by Cho describes transmitting and receiving

signals at a rate "in the range of 1 to 1 billion samples per second." Col. 3, lines 34-38. Assuming this refers to a RADAR frequency range of 1 Hz to 1 Ghz, the signal frequencies are well below that taught by the Appellant, as necessary for detection of rapidly moving destructive objects or ballistic projectiles. Further, if this is merely the system sampling rate, and not a specification of frequency range (which is equally likely, given the vague reference made by Cho), then Cho discloses no particular frequency range at all.

The Appellant requests consideration of representative statements made by Cho, such as: "It is a[n] ... object of the invention to provide an automobile with a system to reduce the amount of physical damage resulting from a collision. ... to provide a system that automatically deploys air bags externally of the vehicle ...", Col. 2, lines 32-42; " ... the inflated air bag will absorb the energies associated with *colliding bodies* ...", Col. 4, lines 10-12; "The air bags provide an energy absorbing buffer between the *colliding vehicles* ... as illustrated in Figs. 5, 6, and 6A, to help absorb the *collision energies*, air bags convert the *absorbed energies* ..." Col 5, lines 21-24. None of these statements teach a "destructive object (or ballistic projectile) detection system", an anti-ballistic air bag, and deployment of such an air bag after detection by such a system, of a "destructive object (or ballistic projectile) in proximity to said person" as claimed by the Appellant. All of the emphasis is on protecting a vehicle, not a person. Further, such references teach away from the Appellant's invention, since the reactive personnel protection system is designed to prevent any collision between the detected object and personnel whatsoever. While Cho's invention

operates to cushion colliding bodies against each other, the Appellant's invention operates to prevent such collisions entirely.

Claim 1 was amended (but not entered as such by the Examiner) in response to the final office action to include a *ballistic* projectile detection system and a gas generation system for rapid deployment of an *anti-ballistic* air bag in response to the approach of a *ballistic* projectile in proximity to personnel. The limitation of an anti-ballistic air bag, along with the limitations imposed by Claims 4 (i.e., deploying the air bag across the opening of a room) are not taught by Cho. As such, it is believed that the Examiner's objections regarding independent Claim 1, and dependent Claim 4, have been overcome.

Claim 1 is separately patentable from Claims 25-26 because Claim 1 discloses the additional limitation of a radar-based detection system (over Claim 25), and does not claim a ballistic projectile (over Claim 26). Claim 4 is separately patentable from Claims 1 and 25-26 because Claim 4 discloses the additional limitation of deploying the air bag across the opening of a room. Claim 26 is separately patentable from Claims 1, 4, and 25 because Claim 26 discloses the additional limitations of a radar-based projectile system, wherein the projectile is a ballistic projectile.

In summary, the Cho reference fails to disclose the elements of a "destructive object detection system," or a "radar-based projectile detection system," an "anti-ballistic" air bag, and a gas generating system for "rapid deployment of the air bag in response to detection of the approach of a destructive object (or projectile) in proximity to said person ...". Since

these limitations are not disclosed in the cited art, any objection to Claims 1, 4, and 25-26 by the Examiner must fail. The Appellant respectfully asserts that the Cho reference fails to anticipate Claims 1, 4, and 25-26, and therefore, the Appellant traverses this ground of rejection.

D. As to whether Claims 17 and 25 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Nitschke, et al., the Appellant contends that rejection of Claims 17 and 25 under 35 U.S.C. §102(e) is improper because Nitschke et al. does not anticipate the elements of "a destructive object detection system", or "a radar based projectile detection system"; a "rapidly" deployable airbag, and a gas generating system for "rapid deployment of the airbag in response to detection of the approach of said object (or a projectile) in proximity to said person." Nitschke et al. also fails to teach the steps of "detecting the approach of a destructive object," or discriminating the presence of said object ...".

As noted above, anticipation requires the disclosure in a single prior art reference of each element of the claim "arranged as in the claim." *See Id.* Nitschke et al. also fails on this point.

Nitschke et al. teaches accelerometer instrumentation of vehicle motion, to which the Examiner has analogized the "destructive object" claimed by the Applicant. However, it is impractical to instrument a "destructive object," much less a "ballistic projectile," to detect

its approach to a person; this is not a part of the system claimed by the Appellant. Nitschke measures the vehicle speed and estimates the speed of the occupant toward the vehicle, based on the accelerations of each, which depend on their physical relationship in space, and relative forward velocities. This interpretation of the Nitschke reference is supported by statements such as " ... the acceleration dependent displacement of the occupant ..." [Col. 5, lines 2-3) and "on the basis of a crash process" [Col. 8, lines 14-15], which are both inapplicable to the instant invention. A destructive object, defined as an acoustic shock wave, or a ballistic projectile, is not taught. No detection or discrimination of objects occurs; Nitschke assumes the object type, location, and the type of collision that will occur. Thus, the Nitschke reference does not anticipate a reactive personnel protection system comprising a "destructive object detection system", nor a method to reactively protect personnel having the steps of "detecting" and "discriminating" approaching destructive or ballistic objects.

Claim 17 is separately patentable from Claim 25 because Claim 17 is a method claim, while Claim 25 is a claim to a system/apparatus. Further, Claim 17 includes the step of "discriminating" the presence of the object with respect to the presence of electronic noise.

In summary, the Nitschke et al. reference fails to disclose the element of a "destructive object detection system," or a method which includes the steps of "detecting the approach of said object" or "discriminating the presence of said object with respect to the presence of electronic noise." Since these limitations are not disclosed in the cited art, any objection to Claim 17 and 25 by the Examiner must fail. The Appellant respectfully asserts

that the Nitschke et al. reference fails to anticipate Claims 17 and 25, and therefore, the Appellant traverses this ground of rejection.

E. As to whether Claims 17 and 25 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Caruso, et al., the Appellant contends that rejection of Claims 17 and 25 under 35 U.S.C. §102(e) is improper because Caruso et al. does not anticipate the elements of "a destructive object detection system", or "a radar based projectile detection system"; a "rapidly" deployable airbag, and a gas generating system for "rapid deployment of the airbag in response to detection of the approach of said object (or a projectile) in proximity to said person." Caruso et al. also fails to teach the steps of "detecting the approach of a destructive object," or discriminating the presence of said object ...".

As noted above, anticipation requires the disclosure in a single prior art reference of each element of the claim "arranged as in the claim." *See Id.* Caruso et al. also fails on this point.

In a fashion similar to the Nitschke reference, Caruso et al. teaches accelerometer instrumentation of vehicle motion, to derive a particular "oscillation value" indicating whether restraint of a vehicle occupant is necessary. See Caruso et al., Col. 3, line 37 - Col. 4, line 3. Such signal components (deceleration and oscillation) are not present in the system of the Appellant's invention. The use of accelerometers and signal sampling techniques taught by Caruso are simply inapplicable to the Appellant's invention. Therefore, Caruso

et al. fails to teach a system which detects the approach of a "destructive object," the object being defined as an acoustic shock wave, or a ballistic projectile. In fact, no detection or discrimination of objects occurs. Like Nitschke et al., Caruso et al. assumes the object type, location, and the type of collision. Thus, the Caruso reference does not anticipate a reactive personnel protection system comprising a "destructive object detection system", nor a method to reactively protect personnel having the steps of "detecting" the presence of, and "discriminating" approaching destructive or ballistic objects. Since these limitations are not disclosed in the cited art, any objection to Claim 17 and 25 by the Examiner must fail.

Claim 17 is separately patentable from Claim 25 because Claim 17 is a method claim, while Claim 25 is a claim to a system/apparatus. Further, Claim 17 includes the step of "discriminating" the presence of the object with respect to the presence of electronic noise. The Appellant respectfully asserts that the Caruso et al. reference fails to anticipate Claims 17 and 25, and therefore, the Appellant traverses this ground of rejection.

F. As to whether Claims 6 and 8 are unpatentable under 35 U.S.C. § 103(a) over Genovese in view of Khandhadia, et al., the Appellant contends that rejection of Claims 6 and 8 under 35 U.S.C. § 103(a) over Genovese in view of Khandhadia, et al. is improper because neither reference anticipates the elements of "a destructive object detection system", or "a radar based projectile detection system"; and a gas generating system for

"rapid deployment of the airbag in response to detection of the approach of said object (or a projectile) in proximity to said person."

As noted above, Genovese fails to disclose a "radar-based projectile detection system", a "rapidly deployable air bag", and deployment of such an air bag, after detection by such a system, of "detection of the approach of a projectile in proximity to said person" as claimed by the Applicant. In addition, Genovese fails to teach use of an air bag made out of "polyethylene" or "aramid fiber" material. Thus, Khandhadia et al. must operate to supply these missing elements. However, Khandhadia et al., which the Examiner notes is only relied upon for teaching the substitution of certain kinds of air bag material, also fails to teach each of these elements as claimed by the Appellant's invention, with the exception of teaching the use of polyethylene for air bags.

The Examiner asserts that it would be obvious to one of ordinary skill to substitute one "equivalent" material type to another. The appellant agrees. However, there is no motivation for one familiar with the Genovese reference to look to Khandhadia et al. (dealing with reducing the toxicity of combustion by products for nonazide gas generants by applying a coating to conventional automotive air bags) for substitution of materials. The materials used are not "equivalent." As noted in previous responses by the Appellant, " ... an Examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done." *See Ex*

Parte Levengood, 28 U.S.P.Q. 2d, 1300, 1301-02 (BPAI 1993). Merely stating that it would be obvious to substitute equivalent materials, when such materials are not equivalent, is not evidence, nor does it present a compelling case for one skilled in the art to make such a substitution.

Further, even if the teachings of Genovese are combined with those of Khandhadia et al., there is no suggestion in either reference to construct an air bag from "aramid fiber" material, as claimed by the Appellant. Claim 6 is separately patentable from Claim 8 because Claim 6 includes an airbag constructed from aramid fiber, which is different from the polyethylene material claimed in Claim 6.

In summary, the Genovese reference fails to teach the elements of "a radar based projectile detection system," a "rapidly" deployable airbag, and a gas generating system for "rapid deployment of the airbag in response to detection of the approach of said object (or a projectile) in proximity to said person." Khandhadia et al. also fails to disclose these elements, or the claimed element of an air bag constructed from an "aramid fiber." Since these limitations are not disclosed in the cited art, any objection to Claims 6 and 8 by the Examiner must fail. The Appellant respectfully asserts that there is no motivation to combine Genovese with Khandhadia et al. Further, the Appellant asserts that even if Genovese is combined with Khandhadia et al., the combination fails to render Claims 6 and 8 as obvious, and therefore, the Appellant traverses this ground of rejection.

The following tables serve as an aid for illustrating the differences between individual claims, and show some of the claim elements (although not all) which have not been disclosed in each reference cited by the Examiner, with respect to each claim.

CLAIM NO.	GENOVESE	KHANDHADIA ET AL.
1	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile
2	operating radar system at 8-20 Ghz	operating radar system at 8-20 Ghz
3	operating radar system at 10.5 Ghz	operating radar system at 10.5 Ghz
4	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; interposing the airbag between the person and the projectile upon deployment	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile; interposing the airbag between the person and the projectile upon deployment
5	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; deploying the airbag across a room opening, between the person and projectile	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile; deploying the airbag across a room opening, between the person and projectile

6	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; air bag made of polyethylene	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile
7	air bag made of woven ballistic material	air bag made of woven ballistic material
8	air bag made of aramid fiber	air bag made of aramid fiber
9	projectile detection system with anti-jamming electronics	projectile detection system with anti-jamming electronics
17	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise
18	the step of detecting a ballistic projectile using a radar-based detection system	the step of detecting a ballistic projectile using a radar-based detection system
19	operating a radar-based detection system at a frequency of 8-20 Ghz	operating a radar-based detection system at a frequency of 8-20 Ghz
20	operating a radar-based detection system at a frequency of 10.5 Ghz	operating a radar-based detection system at a frequency of 10.5 Ghz

21	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise; deploying the airbag across a room opening, between the person and projectile	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise; deploying the airbag across a room opening, between the person and projectile
25	a destructive object detection system; a rapidly deployable airbag; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person
26	radar-based ballistic projectile detection system	radar-based ballistic projectile detection system
27	operating a radar-based ballistic projectile detection system at a frequency of 8-20 Ghz	operating a radar-based ballistic projectile detection system at a frequency of 8-20 Ghz
28	a destructive object detection system; a rapidly deployable airbag; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person; deploying the airbag across a room opening, between the person and projectile	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person; deploying the airbag across a room opening, between the person and projectile
30	air bag with a front and rear surface to slow and redirect a projectile	air bag with a front and rear surface to slow and redirect a projectile

31	air bag made from polyethylene	air bag with a front and rear surface to slow and redirect a projectile
32	rapidly deployable air bag; radar-based projectile detection system operating at a frequency of 8-20 Ghz	radar-based projectile detection system operating at a frequency of 8-20 Ghz

CLAIM NO.	CHO	NITSCHKE ET AL.	CARUSO ET AL.
1	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile
2	operating radar system at 8-20 Ghz	operating radar system at 8-20 Ghz	operating radar system at 8-20 Ghz
3	operating radar system at 10.5 Ghz	operating radar system at 10.5 Ghz	operating radar system at 10.5 Ghz

4	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile; interposing the airbag between the person and the projectile upon deployment	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile; interposing the airbag between the person and the projectile upon deployment	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile; interposing the airbag between the person and the projectile upon deployment
5	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; deploying the airbag across a room opening, between the person and projectile	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; deploying the airbag across a room opening, between the person and projectile	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; deploying the airbag across a room opening, between the person and projectile

6	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; air bag made of polyethylene	radar-based projectile detection system; rapidly deployable air bag; deploying an air bag in response to detecting the approach of a projectile; air bag made of polyethylene	radar-based projectile detection system; deploying an air bag in response to detecting the approach of a projectile
7	air bag made of woven ballistic material	air bag made of woven ballistic material	air bag made of woven ballistic material
8	air bag made of aramid fiber	air bag made of aramid fiber	air bag made of aramid fiber
9	projectile detection system with anti-jamming electronics	projectile detection system with anti-jamming electronics	projectile detection system with anti-jamming electronics
17	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise

18	the step of detecting a ballistic projectile using a radar-based detection system	the step of detecting a ballistic projectile using a radar-based detection system	the step of detecting a ballistic projectile using a radar-based detection system
19	operating a radar-based detection system at a frequency of 8-20 Ghz	operating a radar-based detection system at a frequency of 8-20 Ghz	operating a radar-based detection system at a frequency of 8-20 Ghz
20	operating a radar-based detection system at a frequency of 10.5 Ghz	operating a radar-based detection system at a frequency of 10.5 Ghz	operating a radar-based detection system at a frequency of 10.5 Ghz
21	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise; deploying the airbag across a room opening, between the person and projectile	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise; deploying the airbag across a room opening, between the person and projectile	the step of detecting the approach of an object; the step of discriminating the presence of the object in the presence of electronic noise; deploying the airbag across a room opening, between the person and projectile

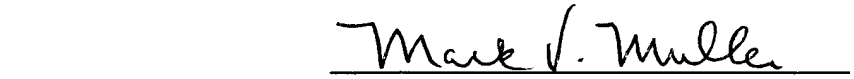
25	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person
26	radar-based ballistic projectile detection system	radar-based ballistic projectile detection system	radar-based ballistic projectile detection system
27	operating a radar-based ballistic projectile detection system at a frequency of 8-20 Ghz	operating a radar-based ballistic projectile detection system at a frequency of 8-20 Ghz	operating a radar-based ballistic projectile detection system at a frequency of 8-20 Ghz

28	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person; deploying the airbag across a room opening, between the person and projectile	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person; deploying the airbag across a room opening, between the person and projectile	a destructive object detection system; deployment of the airbag in response to a destructive object (ballistic or shock wave) proximate to a person; deploying the airbag across a room opening, between the person and projectile
30	air bag with a front and rear surface to slow and redirect a projectile	air bag with a front and rear surface to slow and redirect a projectile	air bag with a front and rear surface to slow and redirect a projectile
31	air bag made from polyethylene	air bag made from polyethylene	air bag made from polyethylene
32	rapidly deployable air bag; radar-based projectile detection system operating at a frequency of 8-20 Ghz	rapidly deployable air bag; radar-based projectile detection system operating at a frequency of 8-20 Ghz	rapidly deployable air bag; radar-based projectile detection system operating at a frequency of 8-20 Ghz

In summary, all of the cited art references fail to disclose various elements of the invention as they are defined and claimed by the Appellant. For this reason, it is respectfully asserted that the Genovese, Cho, Nitschke et al., Caruso et al., and Khandhadia et al. references fail on multiple grounds to anticipate the Appellant's invention under 35 U.S.C. §102(b) and §102(e), or render the invention obvious under 35 U.S.C. §103(a).

The Appellant respectfully requests reconsideration by the Examiner and consideration by the Board of the arguments presented above. It is believed that none of the claims considered in this Appeal have been anticipated or rendered obvious by the cited art. Therefore, it is believed that the grounds of rejection cited by the Examiner are in error, and the Appellant respectfully requests reversal of the final rejection. Any deficiency in fees as submitted with this brief should be charged to deposit account 10-0447.

Respectfully submitted,
JENKENS & GILCHRIST
A Professional Corporation



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Appendix

1. A reactive personnel protection system comprising:

a radar-based projectile detection system;

at least one rapidly deployable air bag; and

a gas-generating system for rapid deployment of said air bag in response to detection of the approach of a projectile in proximity to said person by said detection system.

2. The system of Claim 1 wherein said radar based projectile detection system operates at a frequency of 8-20 Ghz.

3. The system of Claim 1 wherein said radar based projectile detection system operates at a frequency of 10.5 Ghz.

4. The system of Claim 1 wherein said rapidly deployable air bag is interposed between said projectile and said person upon deployment.

5. The system of Claim 1 wherein said rapidly deployable air bag is deployed across an opening into a room located between said person and said object.

6. The system of Claim 1 wherein said rapidly deployable air bag is constructed from polyethylene material.

7. The system of Claim 1 wherein said rapidly deployable air bag is constructed from woven ballistic material.

8. The system of Claim 1 wherein said rapidly deployable air bag is constructed from aramid fiber material.

9. The system of Claim 1 wherein said radar based projectile detection system has anti-jamming electronics.

17. A method to reactively protect personnel from the rapid approach of an object by deployment of an air bag prior to the arrival of the object at the location of said personnel, comprising the steps of:

detecting the approach of said object;

discriminating the presence of said object with respect to the presence of electronic noise;

activation of a gas-generation system in response to discrimination of the presence of said object; and

deployment of an air bag between said object and said personnel responsive to said activation of said gas-generation system.

18. The method of Claim 17, wherein said detecting step is accomplished using a radar-based projectile detection system and wherein said object is a ballistic projectile.

19. The method of Claim 18, wherein said radar-based projectile detection system operates at a frequency of 8-20 Ghz.

20. The method of Claim 18, wherein said radar-based projectile detection system operates at a frequency of 10.5 Ghz.

21. The method of Claim 17, wherein said air bag deployment is accomplished across an opening into a room located between said personnel and said object.

25. A reactive personnel protection system of a type in which at least one airbag is inflated responsive to detection of a destructive object prior to contact between said object and a person, said system comprising:

a destructive object detection system;

at least one rapidly deployable airbag; and

a gas-generating system for rapid deployment of said airbag in response to detection of the approach of said object in proximity to said person by said detection system.

26. The system of Claim 25, wherein said detection system is a radar -based projectile detection system and wherein said object is a ballistic projectile.

27. The system of Claim 26, wherein said radar-based projectile detection system operates at a frequency of 8-20 Ghz.

28. The system of Claim 25, wherein said airbag deployment is accomplished across an opening into a room located between said person and said object.

30. A reactive personnel protection system comprising:

a radar-based projectile detection system;

at least one rapidly deployable anti-ballistic air bag, said air bag having a front surface and a rear surface; and

a gas-generating system for rapid deployment of said air bag in response to detection of the approach of a projectile in proximity to said person by said detection system, wherein the front surface and the rear surface are adapted to slow and redirect the projectile.

31. The system of Claim 31 wherein the rapidly deployable air bag is constructed from polyethylene material.

32. A reactive personnel protection system of a type in which at least one air bag is inflated responsive to detection of a destructive object prior to contact between said object and a person, said system comprising:

a destructive object detection system;

at least one rapidly deployable air bag; and

a gas-generating system for rapid deployment of said air bag in response to detection of the approach of said object in proximity to said person by said detection system, wherein said detection system is a radar-based projectile detection system operating at a frequency of 8-20 Ghz, and wherein said object is a ballistic projectile.